

### Abstract of the Disclosure

A system and method for compensating for branching instructions in trace caches is disclosed. A branch predictor uses the branching behavior of previous branching instructions to select between several traces beginning at the same linear instruction pointer (LIP) or instruction. The fetching mechanism of the processor selects the trace that most closely matches the previous branching behavior. In one embodiment, a new trace is generated only if a divergence occurs within a predetermined location. A divergence is a branch that is recorded as following one path (*i.e.* taken) and during execution follows a different path (*i.e.* not taken).